



CURRENT DEVELOPMENTS IN THE VALORIZATION OF APPLE PROCESSING WASTE IN TO VALUE ADDED FUNCTIONAL BIOACTIVE COMPOUNDS: A COMPREHENSIVE OVERVIEW

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<https://doi.org/10.34302/crpjfst/2024.16.4.7>

Article history:

Received

May 15th, 2024

Accepted

November 10th, 2024

Keywords:

Apple pomace;

Valorization;

Conventional extraction;

Non-conventional extraction;

Bioactive constituents.

ABSTRACT

Apple is a potential fruit and consumed throughout the globe. Processing apple results three fourth fraction of apple juice as a major product and one fourth fraction of apple pomace as by product or waste. Direct disposal of this waste creates environmental problem. However, apple pomace is considered to be a significant source of pectin, carbohydrates, amino acids, protein, essential fatty acids, and phenolic compounds. Effective utilization of apple pomace into food and nutraceutical industries could be a suitable waste management strategy. In order to extract these bioactive constituents, various conventional e.g. Soxhlet extraction (SE), maceration, and hydro-distillation (HD) and novel processing techniques e.g. ultrasound assisted extraction (UAE), microwave assisted extraction (MAE), supercritical fluid extraction (SCFE), pressurized liquid extraction (PLE), pulse electric field extraction (PEF), enzyme assisted extraction (EAE), and liquid-liquid extraction techniques (LLE) are considered. Separation, purification, identification and quantification followed by high performance liquid chromatography (HPLC) and nuclear magnetic resonance (NMR) spectroscopy are important in order to characterize the bioactive constituents available in apple pomace. This paper reviews the valorisation of apple pomace into high valued bioactive constituents by different extraction strategies as a sustainable waste management approach.
